### KNOTWEEDS

**BACKGROUND**
Native to Asia, knotweeds were first planted in North America in the late 1800s as ornamental garden plants. They escaped cultivation and have spread to most states. In their native range, knotweeds are early colonizers after volcanic eruptions, stems pushing through volcanic rock. Similarly, stems can grow through pavement and building foundations necessitating costly removal and repairs. Japanese knotweed is a regulated weed in Alabama, California, Connecticut, Iowa, Idaho, Illinois, Massachusetts, Minnesota, Montana, Nebraska, New Hampshire, Ohio, Oregon, Vermont, Washington, West Virginia, Wisconsin, and Wyoming.

**DESCRIPTION**
Herbaceous perennials (non-woody plants that return each year)
- Shrub-like forms that can exceed 10 ft tall
- New shoots sprout from spreading rhizomes (underground stems) that can grow to 65 feet long. Leaves are alternate, simple and broadly oval with pointed tips.
- Stems die back to the ground after hard frost and new stems emerge in the spring.
- New shoots sprout from spreading rhizomes (underground stems) that can grow to 65 feet long. Leaves are alternate, simple and broadly oval with pointed tips.
- Flowers are produced in white clusters in the late summer.
- Multiple, hollow stems form a clump that resembles bamboo.
- Stems are 2-3 ft tall can reduce overall plant height and vigor before a late summer or early fall herbicide application. Mowing stimulates stem production and will not eliminate infestations.
- Spring and summer mowing when plants are 2-3 ft tall can reduce overall plant height and vigor before a late summer or early fall herbicide application. Mowing stimulates stem production and will not eliminate infestations.
- Grazing with cattle, sheep or goats can suppress infestations if repeated multiple times throughout the growing season. Supplemental feed may be necessary. Grazing alone will not eliminate knotweeds.
- Stem injection with glyphosate herbicide is generally not recommended because only stems directly injected are impacted and many stems are too small or breakable for injection. However, there may be situations where this method is useful to prevent non-target damage.
- Digging up plants is an option for newly established plants but will not eliminate infestations. Rhizomes (underground stems) must be removed multiple times per year for effective control. Wear protective clothing including gloves to prevent possible skin irritation.

**REPRODUCTION**
Knotweeds can grow from pieces of stems and rhizomes so pieces must be managed carefully to prevent new infestations. Knotweeds can also spread by seed.

**CHEMICAL TREATMENT OPTIONS**

**Apply a foliar spray in the late summer to early fall at least 2 days before frost. This timing often coincides with flowering. Choose ONE of the following common herbicides used for knotweed control.**

<table>
<thead>
<tr>
<th>Active Ingredient</th>
<th>Broadcast Spray Rate Per Acre</th>
<th>Spot Spray Rate Per Gallon</th>
<th>Efficacy One Year Post Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imazapyr</td>
<td>48-64 fl oz</td>
<td>0.5-1%</td>
<td>Good to Excellent</td>
</tr>
<tr>
<td>Aminopyralid</td>
<td>7-14 fl oz</td>
<td>equivalent to broadcast</td>
<td>Good</td>
</tr>
<tr>
<td>Glyphosate</td>
<td>3-8 lb</td>
<td>4-8%</td>
<td>Good to Moderate</td>
</tr>
<tr>
<td>2,4-D</td>
<td>2-2.5 lb</td>
<td>4%</td>
<td>Moderate</td>
</tr>
<tr>
<td>Triclopyr</td>
<td>64-128 fl oz</td>
<td>15-22.5%</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

*Do not exceed the labeled rate of 7 oz per acre broadcast on a field scale.

**Cut and treat stems repeatedly while plants are actively growing. Choose ONE of the following common herbicides used for knotweed control.**

<table>
<thead>
<tr>
<th>Active Ingredient</th>
<th>Broadcast Spray Rate Per Acre</th>
<th>Mixing Percentage</th>
<th>Efficacy One Year Post Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imazapyr</td>
<td>Not Applicable</td>
<td>20-25% in oil</td>
<td>Moderate</td>
</tr>
<tr>
<td>Triclopyr + 2,4-D</td>
<td>4% in oil</td>
<td>Moderate</td>
<td></td>
</tr>
<tr>
<td>Glyphosate</td>
<td>20-25% in oil</td>
<td>Moderate</td>
<td></td>
</tr>
</tbody>
</table>

For herbicide applications, the treatment area should be considered. Imazapyr and aminopyralid are not registered for urban areas. Use aquatic formulations if application will be near water, and note that there is no aquatic formulation of aminopyralid.

**TREATMENTS**

<table>
<thead>
<tr>
<th><strong>Herbicide Application Options</strong></th>
<th><strong>Efficacy One Year Post Treatment</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Imazapyr</td>
<td>Good to Excellent</td>
</tr>
<tr>
<td>Aminopyralid</td>
<td>Good</td>
</tr>
<tr>
<td>Glyphosate</td>
<td>Good to Moderate</td>
</tr>
<tr>
<td>2,4-D</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

**OTHER TREATMENT OPTIONS**

- Biological control is in development for North America and has been used experimentally in the United Kingdom.
- Digging up plants is an option for newly established plants but will not eliminate infestations. Rhizomes (underground stems) must be removed multiple times per year for effective control. Wear protective clothing including gloves to prevent possible skin irritation.

**CONTROL**

<table>
<thead>
<tr>
<th>Ideal timing for treatment options</th>
<th>Spring</th>
<th>Summer</th>
<th>Fall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foliar spray</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cut stem treatments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mow</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graze</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dig up or_smother plants</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Mowing should be followed with a late summer foliar application.

Recommended herbicide application rates are subject to change so please refer to the product label. Also refer to the label for recommended adjuvants. Reference to commercial products or trade names does not imply endorsement. Herbicide treatment options are based upon the Midwest Invasive Plant Network Control Database mipncontroldatabase.wisc.edu.

**Biological control is in development for North America and has been used experimentally in the United Kingdom.**
Japanese, giant and their hybrid called Bohemian knotweed (Polygonum cuspidatum, P. sachalinense and Polygonum x bohemicum respectively) can overtake shorelines, grasslands, forest edges, roadways, and residential yards. These infestations reduce wildlife habitat, species diversity and may damage property. Knotweed shoots can grow through pavement and building foundations resulting in costly damage. It is important to find and eliminate knotweed infestations.

Japanese knotweed flowers
Knotweed infestation
Knotweed infestation
Knotweed flowers
Knotweed infestation
Knotweed leaves
Knotweed infestation
Japanese knotweed leaf
Knotweed stems look similar to bamboo
Knotweed leaves
Knotweed flowers
Knotweeds seeds
Comparison of Japanese (left) and hybrid (right) knotweed flowers
Comparison of giant, hybrid (Bohemian) and Japanese knotweeds
Knotweed flowers
Knotweed infestation

In accordance with the Americans with Disabilities Act, this information is available in alternative forms of communication upon request by calling 651-201-6000. TTY users can call the Minnesota Relay Service at 711 or 1-800-627-3529. The MDA is an equal opportunity employer and provider.

MORE INFORMATION CAN BE FOUND AT THE FOLLOWING WEBSITES:

U.S. FOREST SERVICE
www.fs.fed.us/database/feis/plants/forb/polspp/all.html

MINNESOTA DEPARTMENT OF AGRICULTURE
mda.state.mn.us/plants/pestmanagement/weedcontrol/noxiouslist

UNIVERSITY OF WISCONSIN EXTENSION
learningstore.uwex.edu/Assets/pdfs/A3924-11.pdf

In accordance with the Americans with Disabilities Act, this information is available in alternative forms of communication upon request by calling 651-201-6000. TTY users can call the Minnesota Relay Service at 711 or 1-800-627-3529. The MDA is an equal opportunity employer and provider.